

A HISTOPATHOLOGICAL STUDY OF CHOLECYSTECTOMY SPECIMENS SAMPLED FROM APRIL 2012 TO APRIL 2013 IN THE PATHOLOGY DEPARTMENT OF THE MUNICIPAL HOSPITAL, CLUJ-NAPOCA

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SUMMARY. Cholecystitis is the most common disease of the gallbladder, usually caused by calculi or, less frequent, by acute inflammations of the organ. In the vast majority of the cases, the treatment is surgical removal of the gallbladder. Cholecystectomy specimens are referred to the pathology department for microscopic confirmation of the disease and exclusion of a neoplastic disease. We analysed 167 specimens, seeking inflammation, the state of the epithelial lining and other markers used for cholecistectomy pathological reporting. We concluded that the majority of the analysed specimens were affected by chronic inflammation, with very few cases of acute involvement.

Keywords: cholecystitis, inflammation, pathological sampling.

Introduction

The gallbladder is a piriform bladder that is attached to the extrahepatic biliary system *via* the cystic duct and rests in a shallow depression located on the inferior surface of the posterior right lobe of the liver (Mills, 2007). The gallbladder functions are to store bile, concentrate bile and, when stimulated, to eject bile into the lumen of the duodenum. Its microscopic anatomy reflects all these functions (Vaughan, 2002). Its wall consists largely of a highly folded mucosa, with a simple columnar epithelium overlying a typical lamina propria; a muscularis with bundles of muscle fibers oriented in all directions to facilitate emptying the organ; an external adventitia where it is against the liver and a serosa where it is exposed (Mescher, 2010).

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Chronic cholecystitis is the most commonly encountered disease of the gallbladder; the overwhelming majority of cholecystectomies are performed for chronic cholecystitis. It is associated with cholelithiasis in more than 90% of the cases (Mills, 2010). Microscopically, the mucosa of a chronically inflamed gallbladder shows various degrees of mononuclear infiltration and fibrosis. The epithelium may be relatively normal or atrophic or show hyperplastic and metaplastic changes. The gallbladder may show fibrosis, muscle hypertrophy, encrusted stones, and nodular collections of foamy macrophages (Rosai, 2011). Sometimes, the mucosa epithelium forms diverticula which can reach the serosal surface, called Rokitansky-Aschoff sinuses (Levinson, 2008).

Acute cholecystitis is a clinically defined entity characterized by an abrupt injury of the organ. It does not necessarily imply acute inflammation of the gallbladder, in the sense that the hallmark of acute inflammation, polymorphonuclear leucocytes, is often lacking. Nevertheless, it is an acute destructive process typically associated with ischemia, congestion, edema, epithelial denudation, vascular leakage, and fibrinous changes (Mills, 2010).

Resection specimen sampling. Most cholecystectomy specimens are now done laparoscopically rather than by open surgery and submitted opened, or unopened and containing 5-10 ml of bile fluid. When received, the specimen is measured, opened (if not previously performed by the surgeon) and described. In a non-neoplastic specimen, three histology blocks are usually sufficient: the cystic margin, section from the corpus and section from the fundus of the gallbladder. Any other lesion is noted and sampled also (Westra, 2003).

Materials and methods

A total of 167 cholecystectomy specimens received between April 2012 and April 2013 were analyzed. The specimens were received in fresh state to the pathology department, opened and fixed in formalin 4% overnight. The organs were described according to the guidelines, and routine sampling was performed (sections from the cystic margin, the corpus and the fundus of the gallbladder). If the wall of the gallbladder was thickened, additional sections were performed in order to exclude a neoplastic condition. If present, cystic duct ganglia were also sampled.

The histology samples were embedded in paraffin blocks, sectioned at 3 micrometers thickness and stained with hematoxylin and eosin. The slides were analysed using a Leica DM500 microscope with white light and images were taken using a digital camera connected to the microscope. When appropriate, adjacent microscopic fields were photographed and stitched using *Hugin* free software, resulting in high resolution mosaic images of the slides.

The following issues were reported and included in the study:

- erosions of the lining epithelium;
- fibrosis;

- epithelial dysplasia;
- inflammatory infiltrate;
- hypertrophy/atrophy;
- presence of the foamy macrophages;
- vascular congestion;
- adipose infiltrate;
- hemorrhage;
- necrosis;
- presence of Rokitanski-Aschoff sinuses.

Statistical analysis and graphical output was performed using Microsoft Office Excel.

Results and discussion

Of all 167 cases of gallbladder specimens analysed, the vast majority was histologically diagnosed as chronic cholecystitis (91%), and only 9 % were diagnosed as acute or subacute cholecystitis. One case was regarded as scleroatrophic cholecystitis (the gallbladder wall was thickened over 5 mm and extended fibrosis was found microscopically) and one case presented epithelial dysplasia.

Considering the inflammatory infiltrate, 8% of the cases we examined presented lymphoid follicles with consistent germinal centers in the lamina propria of the mucosa and/or the serosa. Transmural inflammatory infiltrate was also a common finding.

A landmark of chronic cholecystitis was the presence of discontinuities of the cover epithelium (Fig. 1A, Fig. 3B).

One case presented transmural eosinophilic infiltrate (Fig. 2D), but not so abundant to be regarded as eosinophilic cholecystitis. In this particular case, the patient presented high eosinophilia, probably associated with the clinical diagnosis of chronic obstructive pulmonary disease (COPD). There was no evidence of intestinal parasites regarding this patient.

A common finding was the presence of nests of foamy macrophages in the lamina propria of the mucosa (53%) and pseudopyloric metaplasia (23%), the latter predominantly in the neck of the gallbladder (Fig. 1C).

As literature shows, acute cholecystitis is not compulsory associated with acute inflammatory infiltrate (neutrophils) but, more often, it is associated with extended erosions and ulcerations of the mucosa, thickened wall, transmural hemorrhage and a loss of the histological architecture of the gallbladder wall (Fig. 1B).

Rokitansky Aschoff sinuses were present in 13% of the cases, all of which were diagnosed as chronic cholecystitis.

One case was diagnosed with multiple adenomatous nodules (Fig 2C), which do not change the diagnosis and do not have any significance for the patient's outcome.

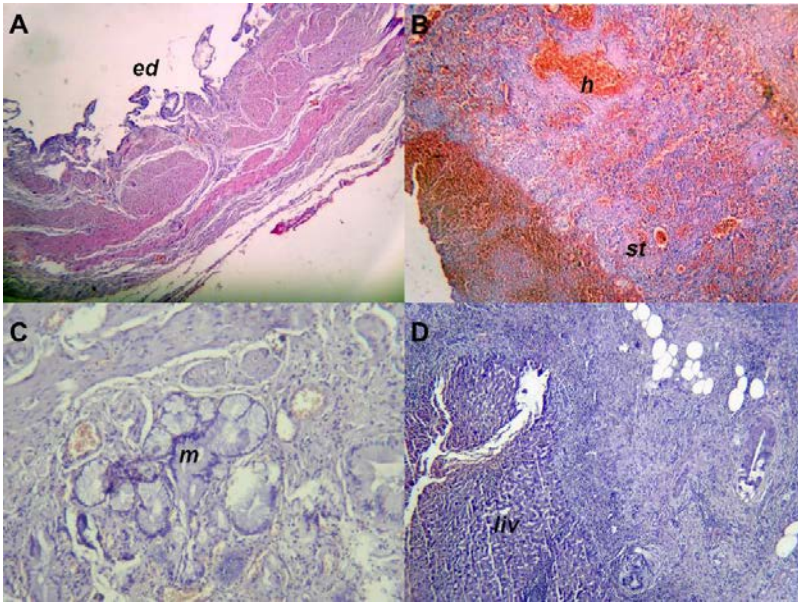


Figure 1. A – Focal epithelial discontinuities (*ed*); B – Hemorrhage (*h*) and stasis (*st*); C – Pseudopyloric metaplasia (*m*); D – Liver tissue (*liv*) attached to the gallbladder.

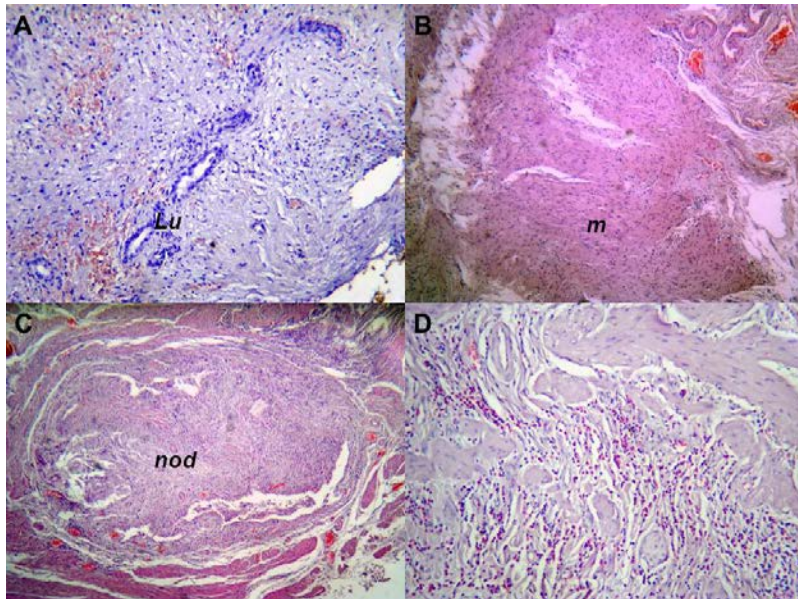


Figure 2. A – Luschka ducts (*Lu*); B – Hypertrophy of the muscular layer (*m*); C – Adenomyomatosis nodule (*nod*); D – Eosinophilic infiltrate.

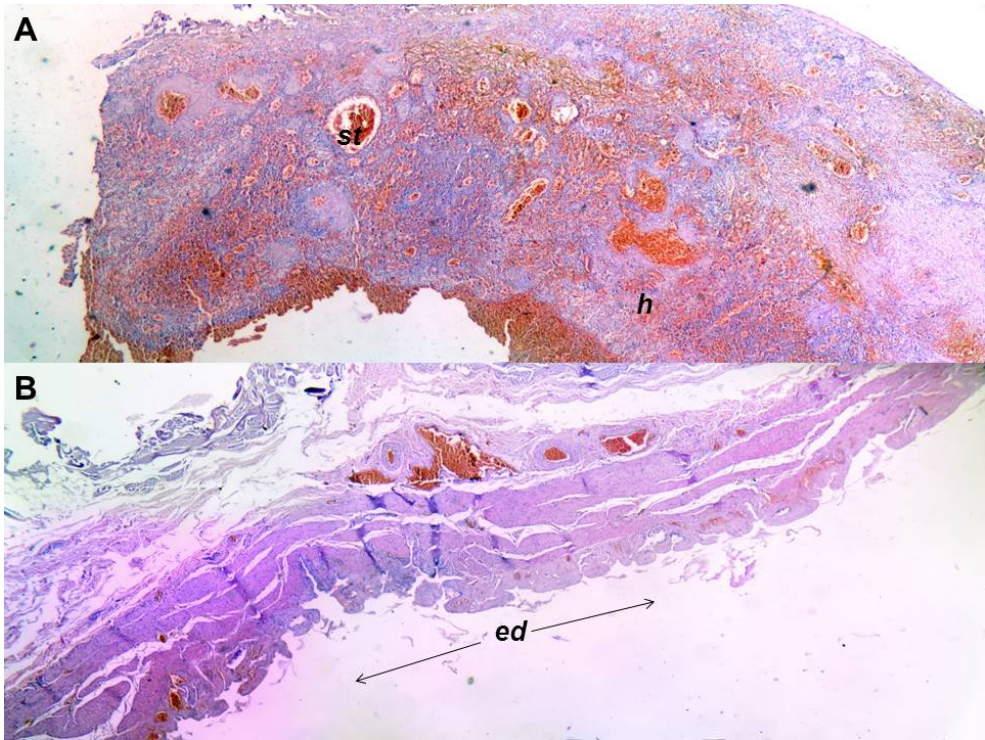


Figure 3. A – Hemorrhage (*h*) and stasis (*st*); B – Extended epithelial erosions (*ed*).

Conclusions

Cholecystitis remains a major cause of addressability in most surgical services, especially due to cholelithiasis. However, histopathological examination remains of undoubtful importance, mainly because of the risk of carcinoma.

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